UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ART UNIT	PAPER NUMBER
2672	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/791,972	SCHKOLNE ET AL.
	Examiner	Art Unit	
	Michelle K. Lay	2672	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-162_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-162_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _02 March 2004_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ . .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Objections

1.   Claim **75** is objected to because of the following informalities: The term "create"

should be changed to "draw" to follow claim 74's preamble. Furthermore, an apparatus

cannot not "create" a virtual object per say, but "generate" a virtual object. Appropriate

correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

2.   Claims **18, 19, 43, 44, 64, 65, 104-107**, are rejected under 35 U.S.C. 112, first

paragraph, as failing to comply with the enablement requirement. The claim(s) contains

subject matter that was not described in the specification in such a way as to enable

one skilled in the art to which it pertains, or with which it is most nearly connected, to

make and/or use the invention.

The limitation of embedding one or more sensors within a virtual component in

claims **18, 43, 64, 104** is not supported by the specification. Paragraph [0069] teaches

embedding sensors in the tool itself; however, the specification does not disclose

embedding sensors within a virtual component. Furthermore, it is unclear how sensors

would be embedded in a virtual component considering sensors are real and the

component is virtual.

3.   Claims **111**, **121-126**, are rejected under 35 U.S.C. 112, first paragraph, as failing

to comply with the enablement requirement. The claim(s) contains subject matter that

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

The limitation of the virtual deformation tool being used to deform the geometry of

the virtual component in claim **111** is not supported by the specification. Paragraph

[0015] teaches the virtual component is a software representation of a physical

component. Furthermore, paragraphs [0119]-[0121] teaches the virtual deformation

tool's function is to deform regions of three-dimensional virtual objects, not the virtual

component. Thusly, it is unclear how and why the virtual deformation tool deforms

itself.

4.   Claims **112**, **127-133**, are rejected under 35 U.S.C. 112, first paragraph, as failing

to comply with the enablement requirement. The claim(s) contains subject matter that

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

The limitation of the virtual smoothing tool being used to smooth the geometry of the virtual component in claim **112** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0122]-[0124] teaches the virtual smoothing tool's function is to smooth regions of three-dimensional virtual objects, not the virtual component. Thusly, it is unclear how and why the virtual smoothing tool smoothes itself.

5.   Claims **113**, **134-140**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of the virtual spray-painting tool being used to spray said virtual component with virtual paint in claim **113** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0125]-[0127] teaches the virtual painting tool's function is spray various colors of virtual paint onto regions of three-dimensional virtual objects, not the virtual component. Thusly, it is unclear how and why the spray-painting tool sprays virtual paint on itself.

6.   Claims **114, 141-147**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of the virtual texture creation tool being used to spray a texture on the virtual component in claims **114** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0016] briefly mention the texture creation tool's function is to "spray" spray texture onto a three-dimensional virtual objects, not the virtual component, but does not provide any further details. Thusly, it is unclear how and why the virtual texture creation tool sprays a texture on itself.

7.   Claim **162** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of *more than* 6 degrees of freedom in claim **162** is not supported by the specification. Even though paragraphs [0041], [0042], and [0111] refer to more than 6 degrees of freedom, it unclear from applicant's disclosure as to what the other degrees of freedom pertain to.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter that the applicant regards as his invention.

8.　　Claim **4** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention.　Claim **4** recites the limitation "software" in line 1.　However,

the software alone cannot perform the operation without a computer, which has not

been claimed in the independent or depending claims.　There is insufficient antecedent

basis for this limitation in the claim.

9.　　Claims **16, 41, 62** are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.　Claims **16, 41, 62** recite the limitation "lack of virtual

depiction".　It is unclear how a virtual component can lack virtual depiction since the

virtual component is depicted on the display.　There is insufficient antecedent basis for

this limitation in the claim.

10.　　Claims **18, 19, 43, 44, 64,** and **65** are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.　Claims **18, 43, 64** recite the

limitation "embedding one or more sensors within a virtual component" in lines 1-2.

However, it is unclear how sensors would be embedded in a virtual component

considering sensors are real and the component is virtual. There is insufficient

antecedent basis for this limitation in the claim.

11.   Claims **23**, **48**, **69** are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claims **23**, **48**, **69** recite the limitation "buttons,

joysticks, scroll wheels, or foot pedals embedded in said virtual component" in lines 1-2.

However, it is unclear how buttons, joysticks, scroll wheels, or foot pedals would be

embedded in a virtual component considering buttons, joysticks, scroll wheels, or foot

pedals are real and the component is virtual. There is insufficient antecedent basis for

this limitation in the claim.

12.   Claims **74-78**, **81-97** are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Claims **74**, **81**, **84**, **87**, **95** recite the limitation

"coincidentally" in line 4. It is unclear what this term means in regards to how the two

input devices are used in conjunction with each other. There is insufficient antecedent

basis for this limitation in the claim.

    Claim **75** recites the limitation "said grabbing tool" and "said pointing tool" in line 3.

No grabbing tool or pointing tool has been described in the independent claim to

understand what "said grabbing tool" or "said pointing tool" pertains to. There is

insufficient antecedent basis for this limitation in the claim.

Additionally, claims **92-94** recites the limitation "virtual object". However, as understood from the claims as well as the specification, the "virtual object" is the object displayed on the screen where the "virtual component" as related to the input device acts on. Thus, is the "virtual object" claimed in claims 92-94 really the "virtual component" of the physical input device? There is insufficient antecedent basis for this limitation in the claim.

13.   Claims **79, 80** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **79** recites the limitation "said grabbing tool", "said gripping tool" and "said pointing tool" in line 4. There is insufficient antecedent basis for this limitation in the claim.

14.   Claims **102-109** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **102** recites the limitation "iconic virtual component only" in line 3, "virtual component only" in line 6 and "a virtual component lacking virtual depiction" in line 7. It cannot be ascertained as to what the scope of the claim is. The term "only" provides a contradiction of the limitations. Is the iconic virtual component a separate entity along with the virtual component, and does the iconic virtual component and virtual component have additional components? Furthermore, it is unclear how a virtual component can lack virtual depiction since the virtual

component is depicted on the display. There is insufficient antecedent basis for this limitation in the claim.

Additionally, claim **104** recites the limitation "embedding one or more sensors within said virtual component" in lines 1-2. It is unclear how sensors would be embedded in a virtual component considering sensors are real and the component is virtual. There is insufficient antecedent basis for this limitation in the claim.

15.   Claims **111**, **121-126**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **111** recites the limitation "said tool is used to deform the geometry of said virtual component" in lines 1-3. However, it is unclear how the deformation tool deforms itself. There is insufficient antecedent basis for this limitation in the claim.

16.   Claims **112**, **127-133**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **112** recites the limitation "said tool is used to smooth a surface said virtual component" in lines 1-3. However, it is unclear how the smoothing tool smoothes a surface of itself. There is insufficient antecedent basis for this limitation in the claim.

17.   Claims **113**, **134-140**, are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Claim **113** recites the limitation "said tool is

used to spray said virtual component with virtual paint" in lines 1-3. However, it is

unclear how the spray-painting tool sprays virtual paint on itself. There is insufficient

antecedent basis for this limitation in the claim.

18.   Claims **114**, **141-147**, are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Claim **114** recites the limitation "said tool is

used to spray a texture on said virtual component" in lines 1-3. However, it is unclear

how the texture creation tool sprays a texture of itself. There is insufficient antecedent

basis for this limitation in the claim.

19.   Claim **159** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim **159** recites the limitation "said handle" in line 1. There

is insufficient antecedent basis for this limitation in the claim.

20.   Claim **162** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim **162** recites the limitation "more than 6 degrees of

freedom". It is unclear what the other degrees of freedom pertain to. There is

insufficient antecedent basis for this limitation in the claim.

No prior art rejections have been made on claims **16**, **23**, **41**, **48**, **62**, **69**, **74-80**, **94**, **102-**

109 due to the unclear scope and severity of the 35 U.S.C. 112, second paragraph

rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-4**, **8**, **28-31**, **33**, **34**, **41**, **53-55**, **57**, **58**, **62**, **81-87**, **110**, **115-117**, **148-151**,

154-161 are rejected under 35 U.S.C. 102(b) as being anticipated by Pryor (US

Publication No. US 2002/0036617 A1).

Pryor teaches a method and apparatus for inputting position, attitude (orientation)

or other object characteristic data to computers for the purpose of Computer Aided

learning, Teaching, Gaming, Toys, Simulations, Aids to the disabled, Word Processing

and other applications.

21.   In regards to claims **1, 161** –

Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object

(6) represented electronically on the screen (7) and cause the pointing action to register

in the software contained in computer (8) with respect to that object (a virtual object), in

order to cause a signal to be generated to the display (7) to cause the object to activate

or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (claim **1**:

generating one or more interface devices to alter and generate one or more two-

dimensional or three-dimensional virtual objects) [0109]. This system can provide

highly accurate position and orientation information in up to 6 degrees of freedom (claim

1: ***wherein said devices can control N degrees of freedom of said virtual objects***;

claim 161: ***wherein N degrees of freedom is 6 degrees of freedom***) [0134].

Furthermore, the invention of Pryor can "alias" the interface devices, such as represent

the input device, such as a pen, as a paintbrush on the screen (7) (claim **1**: ***providing***

one or more three-dimensional virtual tools to a user for said spatial manipulation

or said two-dimensional or said three-dimensional entertainment) [0275]. Fig. 9

illustrates a means for aiding the movement of a person's hands while using the

invention of Pryor in multiple degrees of freedom movement. Shown in Fig. 9a, joystick

(905) has ball (910) attached to it's end in which the data from datums on the ball

position is taken optically by a video camera in up to 6-axes [0382]. Two joysticks may

be used (claim **1**: ***generating one or more interface devices; associating said***

interface devices in conjunction with each other to alter one or more two-

dimensional or three-dimensional virtual components) [0383]. A joystick is often

used for game control (claim **1**: ***providing a plurality of video game controllers to***

said user for spatial manipulation or said two-dimensional or said three-

dimensional entertainment) [0382].

22.   In regards to claims **2, 3** –

Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object

(6) represented electronically on the screen (7) and cause the pointing action to register

in the software contained in computer (8) with respect to that object (a virtual object), in

order to cause a signal to be generated to the display (7) to cause the object to activate

or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (claim **2**:

said interface devices are digital input devices) [0109]. The invention of Pryor

permits the user to use a variety physical objects for the point action, where the sensors

on the physical object are detecting by camera (10). The input device can even be the

user's fingertip (12) (claim **3**: ***said interface device are physical input devices***)

[0109].

23.   In regards to claim **4** –

The datums on an object can be known a priori relative to other points on the

object, and to other datums, by providing it to a user via a CD ROM disc or other

computer interface storage medium having this data [0143] (claim **4**: ***virtual***

components are a software representation of physical input devices).

24.   In regards to claims **8, 28, 53, 57, 148-150** –

Fig. 6 illustrates other movements such as gripping or touching. Parts of the user

such as the hands (*said interface device*), can describe motion or position signatures

and sequence of considerable utility, e.g., grip, pinch (claims **8, 148**: *said interface*

devices is a grabbing tool), grasp (claim **53**: *said interface devices is a gripping*

tool), stretch, bend, twist, rotate (claim **149**: *wherein said grabbing controller is used*

to rotate said one or more virtual objects), screw, point (claim **28**: *said interface*

device is a pointing tool), hammer, throw [0331]. These actions can cause objects

depicted on a screen to be acted on, by sensing the users hand relative to the human or

the computer camera system or the screen [0333]. Furthermore, as an example, if the

hand (*said interface device*) is pulled away with in a certain time, it is interpreted to be

a grasp, and the cow object (610) is moved to a new location on the screen where the

user deposits it, for example, at position (650) (claim **57**: *wherein a first function of*

said gripping tool is to place said virtual objects in a 3D space; claim **150**: *wherein*

said grabbing controller is used to move said one or more virtual objects) [0334].

25.   In regards to claims **29, 30** –

As shown in Fig. 15, the input device controlled by the user (1549) may be a toy

pistol (1550) (claim **29**: *said pointing tool has a physical form resembling a firearm*;

claim **30**: *said firearm is a gun*) [0447].

26.   In regards to claim **31** –

Referring to Fig. 13, a laser pointer (1320) can be used to obtain multiple points

(claim **31**: *said pointing tool has a physical form resembling a laser pointer*) [0430].

27.   In regards to claim **33** –

As shown in Fig. 6, the users hand can describe motion or position signatures and

sequence of considerable utility, such a pointing (claim **33**: *said pointing tool has a*

physical form resembling a pointing hand) [0331].

28.   In regards to claim **34** –

Pryor teaches that the targeted tools could be simple targeted sticks (claim **34**: *said*

pointing tool has a physical form resembling a stick) [0271].

29.   In regards to claims **54, 55** –

Fig. 15 illustrates a sword play video game. As shown, player (1501) holds sword

(1502) [0042]. This sword has a handle (claim **54**: *said gripping tool has a physical*

form resembling a handle; claim **55**: *said handle is a sword handle*).

30.   In regards to claims **58, 157-159** –

As shown in Fig. 3b, the user can pick up the tool (small paintbrush, large

paintbrush, pen, pencil, etc.) (*said gripping tool*) and draw over the surface of a sheet

of paper, surface of the display screen, or projection of computer display (claim **157**:

said controllers is a drawing controller, wherein said controller is used to draw a stroke in said entertainment environment). The application software would not only trace the path of the tip of the targeted work tool, but also treat the tool as though it were a pen or paintbrush, etc., where the characteristics of the tool is found in the associated database [0274]. Furthermore, by drawing directly on a computer display or transparent cover over a computer display, the user can make the targeted tool (e.g. pen, paintbrush) manipulate the computer display and immediately get feedback on how the graphics are affected (claim **58**: *second function of said gripping tool is to draw one or more paths between two or more said virtual objects*; claim **158**: *wherein said stroke is drawn freehand by said user in said entertainment environment*) [0279]. In regards to claim **159**, the tool, e.g., small, paintbrush, large paintbrush, would have a handle for the user to grasp in order to draw over the surface of a sheet of paper, surface of the display screen, or projection of computer display (claim **159**: *wherein said stroke is drawing using said handle by said user in said entertainment environment).*

31.   In regards to claims **110, 115-117** –

Referring to Fig. 3, Pryor uses the example of an artist with tools, such as an eraser (claim **110**: *said 3D virtual tool is an eraser tool, wherein said tool is used to remove a region of a virtual surface*) [0274]. The artist would pick up the tool and normally use the tool over the surface of a sheet of paper, display screen or projection of computer display. The application software would not only trace the path of the tip of

the targeted work too, but also treat the tool as though it were the object, i.e. eraser.

The exact characteristics would be found in the associated database. Extra

parameters, such as the width of the line (claim **117**) or color (claim **136**) could be

determined by keyboard input (***plurality of controls, buttons***) (claim **115**: ***said tool***

has a plurality of controls to activate one or more functions; claims **116**: ***wherein***

said plurality of controls comprises buttons, joysticks, scroll wheels, or foot

pedals embedded in said tool, claim **117**: ***wherein one of said functions is to***

change a size of a default erasing region) [0274].

32.   In regards to claim **151, 154-156**–

Fig. 15 shows a sword (claim **151**: ***wherein said controllers is a slicing***

controller) and pistol game (claim **154**: ***said controllers is a pointing controller***)

where the players (1501) (1549) may use a toy pistol (1550) or sword (1502) that is

viewed by stereo camera system (1510) [0447]. It is noted that both the sword and

pistol is typically pointed at the screen [0453]. The player's hand (1575) or holster

(1520) and pistol (1585) or sword (1502) may be targeted with one or more targets. On

the screen in front of the player is a video display of the OK corral (and/or other imagery

related to the game) with "bad guys" such as represented by computer graphics

generated image (1535) [0447]. To play the game, the player draws his gun or sword

when a bad guy draws his and shoots (claim **154**: ***wherein said controller is used to***

shoot said one or more virtual objects; claim **155**: ***wherein said pointing controller***

is used to select said one or more virtual objects in said entertainment

environment) or attacks, such as slicing [0448]. The computer game software controls

the "bad guys" (1535) coming in to view or leaving the scene [0447]. Thus, when the

player shoots or attacks the "bad guys" (1535), the computer game software removes

the "bad guys" (1535) from view, i.e., rearranging or relocating the virtual objects (claim

151: *wherein said controller is used to slice and relocate said one or more virtual*

objects in said entertainment environment; claim **156**: *said pointing controller is*

used to grab or rearrange said one or more virtual objects in said entertainment

environment).

33.   In regards to claim **160** –

Fig. 4 illustrates a car driving game. Target (420) is placed on the steering while

which can be seen by stereo pair of cameras (405) and (406). As the wheel is turned,

the target moves in a rotary motion that can be transduced accordingly, or as a

compound x and y motion by the camera processor system means in computer (411).

The target (420) can alternatively be attached to any object that we chose to act as a

steering wheel (421) such as the wheel of a child's play dashboard toy (425) (claim **160**:

wherein one of said controllers is a navigation controller, wherein said controller

is used to navigate said user in said entertainment environment) [0294].

34.   In regards to claims **81-87** –

Fig. 6 illustrates parts of the user, such as the hands can describe motion or

position signatures and sequences of considerable utility [0330]. Some natural actions

of this type are grip, pinch, grasp (claim **83**: *grabbing a first extremity*), stretch (claim

85: *stretch said virtual object*), bend, twist (claim **86**: *twist said virtual object*), rotate

(claim **82**, **83**: *rotate said virtual object*), screw, point, hammer, throw, and other

natural actions learned in life (claim **81**: *change placement of a virtual object*, claim

84: *deform a virtual object*) [0331]. The method and system of Pryor detects the

position of one finger, two fingers of one hand, one finger of each hand, two hands

(claims **81**, **84**, **87**: *using two or more of said physical input devices*

coincidentally), or relative motion/position of any of the above with respect to the

human or the computer camera system or the screen [0333]. These actions can cause

objects depicted on the screen to be acted on [0334]. Thus, two hands can be used

where one hand performs one action, such as grabbing (claims **83**, **86**: *grabbing with*

said first grabbing tool), while the second hand performs a second action, such as

rotating (claim **83**: *rotating with grabbing tool*) or twisting (claim **86**: *twisting with*

grabbing tool).

35.   In regards to claims **90**, **91** –

    Fig. 15 shows a sword and pistol game where the players (1501) (1549) may use a

toy pistol (1550) (claim **91**: *pointing tool*) or sword (1502) (claim **91**: *grabbing tool*)

that is also viewed by stereo camera system (1510) [0447]. It is noted that both the

sword and pistol is typically pointed at the screen (claim **90**: *using two or more of said*

physical input devices coincidentally) [0453]. The player's hand (1575), holster

(1520) and pistol (1585) or sword (1502) may be targeted with one or more targets. On

the screen in front of the player is a video display of the OK corral (and/or other imagery related to the game) with "bad guys" such as represented by computer graphics generated image (1535) [0447]. To play the game, the player draws his gun or sword when a bad guy draws his and shoots or attacks, such as slicing [0448] (claim 90: **specifying a point**, claim 91: **using a first pointing tool and a second grabbing tool to specify a point**). The computer game software controls the "bad guys" (1535) coming in to view or leaving the scene [0447]. Thus, when the player shoots or attacks the "bad guys" (1535), the computer game software removes the "bad guys" (1535) from view.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

36.   Claims **9-12, 32, 35-37, 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims **9-12, 35-37, 56** with the exception of disclosing the grabbing tools (claims **9-12**), pointing tools (claim **33, 35-37**), and gripping tools (claim **56**) resembling specific physical forms. However, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices.

With the aid of Fig. 6, Pryor teaches the act of grabbing where the thumb (601)

and the first finger (602) are near an object such as a 3D graphic rendition of a cow

(610) displayed on the screen (615). As the fingers are converged in a pinching motion

depicted as dotted lines (620), the program of computer (630) recognizes this motion of

fingernails (635) and (636) seen by cameras (640) and (641) connected to the computer

which processes their image, as a pinch/grasp motion and can either cause the image

of the cow to be compressed graphically [0334]. Although Pryor is silent about other

grabbing tools, Pryor discloses using retro-reflective material [0111] or targets [0113]

adhered to input devices. Therefore, such material can be adhered to kitchen tongs,

pincers, scissors, and or tweezers that mimic the same pinching motion as the thumb

(601) and first finger (602) (claims **9-12**).

Parts of the user, such as the hands can describe motion or position signatures

and sequences of considerable utility, such as pointing [0331]. This action can cause

objects depicted on a screen to be acted on, by sensing [0334]. Thus, similar to the

grabbing tools, the retro-reflective material [0111] or targets [0113] can be adhered to

input devices, such as a flash light, spray-paint can or camera to mimic the same

pointing motion as the user's finger (claims **33**, **35**, **36**).

As shown in Fig. 15, the input device controlled by the user (1549) may be a toy

pistol (1550) [0447]. Although Pryor is silent about using a glue-gun as a pointing

device, it would have been obvious to interchange the toy-pistol with a glue-gun by

again, using the retro-reflective material [0111] or targets [0113] to mimic the same

point motion as the user's fingers (claim **37**).

Additionally, parts of the user, such as the hands, can describe motion or position signatures and sequences of considerable utility, such as gripping or grasping [0331]. Fig. 15 illustrates a sword play video game. As shown, player (1501) holds sword (1502) [0042]. This sword has a handle. The retro-reflective material [0111] or targets [0113] can be adhered to input devices, such as a shovel handle to mimic the same gripping or grasping motion as the user's hand with the sword (claim **56**) (1502).

These tools can be considered targeted tools, where a targeted work tool can be a toy model of the real world tool or the tool itself, helping the user immediately visualize the properties of the tool in the computer program [0236]. Thus, it would have been obvious to use such physical items in order to provide a realistic simulation of the users motion in regards to the graphic rendition on the screen (615).

37.   Claims **88**, **89** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims **88**, **89** with the exception of modifying an axis of rotation. However, Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend, twist, rotate (claims **88**, **89**: *rotate said virtual object*), screw, point, hammer, throw, and other natural actions learned in life (claim **89**: *using tools to move virtual component to a desired location*) [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (*using two or more*

of said physical input devices coincidentally), or relative motion/position of any of

the above with respect to the human or the computer camera system or the screen

[0333]. These actions can cause objects depicted on the screen to be acted on [0334].

Thus, two hands can be used where one hand performs one action, such as grabbing

(claim **89**: *grabbing with said first grabbing tool*), while the second hand performs a

second action, such as rotating (claim **89**: *rotating with grabbing tool*). Although

Pryor is silent about an axis of rotation, and axis of rotation would be needed for the

user to rotate the virtual object. Furthermore, the invention of Pryor permits the virtual

object to be moved or altered in position. Thus, when the virtual object's position has

been altered, either rotated a certain degree, etc., the axis of rotation as then been

modified (claim **88**: *modify an axis of rotation*).

38.   Claims **92, 93** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Pryor (US Publication No. US 2002/0036617 A1).

        Pryor teaches the limitations of claims **92, 93** with the exception of denoted a point

by intersecting virtual objects and the pointing tools being laser beams. However, from

the rationale of claim 90, it would have been obvious that a point would be created if the

"bad guys" of the video game illustrated in Fig. 15 were to overlap (claim **92**:

interesting first and second virtual objects to denote said point). Additionally, in

one embodiment of Pryor, Pryor teaches using a laser [0642]. In conjunction with the

rationale of claim 90, Pryor teaches "aliasing" objects as other objects [0281]. Thus, it

would have been obvious to one of ordinary skill in the art to alias the laser as a device

with properties for the entertainment environment (claim **93**: *said first and second point tool resembles a laser beam*).

39.   Claims **95-97** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims 95-97 with the exception of disclosing an input device to cut a virtual object. However, Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp (claim 97: *grab virtual object*), stretch (claim 97: *length virtual object*), bend, twist, rotate, screw, point, hammer, throw, and other natural actions learned in life [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (claim **95**: *using two or more of said physical input devices coincidentally*), or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as grabbing, while the second hand performs a second action, such as lengthening.

Additionally, as shown in Fig. 15, a sword video game can incorporate the method of Pryor. It would have been obvious to one skilled in the art that the sword (1502) held by player (1501) can virtually cut the "bad guys" within the game [0441]-[0442].

Furthermore, Pryor teaches that the invention allows the user to "alias" any object

with any other object [0281]. Thus, the hands of the user can be aliased as a sword

that can cut the virtual objects (claims **96**, **97**: *cut virtual objects*).

40.   Claims **152**, **153** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims **152** and **153** with the exception of teaching

using a handle with a laser beam as a slicing controller. However, in one embodiment

of Pryor, Pryor teaches using a laser [0642]. In conjunction with the rationale of claim

151, Pryor teaches "aliasing" objects as other objects [0281]. Thus, it would have been

obvious to one of ordinary skill in the art to alias the laser as a sword in the sword game

described via Fig. 15 if a sword in not available (claim 152: *said slicing controller's*

physical shape is a handle and one of its virtual component is a laser beam).

Furthermore, in regards to claim **153**, Fig. 6 of Pryor illustrates parts of the user, such

as the hands can describe motion or position signatures and sequences of considerable

utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend,

twist, rotate, screw, point, hammer, throw, and other natural actions learned in life

[0331]. These actions can cause objects depicted on the screen to be acted on [0334].

Thus, as in the rationale of claim 152, the handle shaped slicing controller as claimed

can be aliased as the hands described in Fig. 6, to perform the same functions of

dropping objects (claim **153**: *said handle shaped slicing controller is used to drop*

objects).

41.   Claims **5-7, 13-15, 17, 20, 21, 38-40, 42, 45, 46, 59-61, 63, 66, 67** are rejected

under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US

2002/0036617 A1) in view of Harvill et al. (US Patent No. 6,222,523 B1).

Pryor teaches the limitation of claims **5-7, 13-15, 17, 20, 21, 38-40, 42, 45, 46, 59-

61, 63, 66, 67** with the exception of teaching the virtual component coinciding with the

tool's physical form. However, Harvill et al. attaching a tactile stimulus to the users

body when a virtual operator, created by movements of the physical operator,

encounters a virtual object defined by a computer.

Referring to Fig. 6 of Pryor, Fig. 6 illustrates other movements such as gripping or

touching. Parts of the user such as the hands (claims **15, 17, 40, 42, 61, 63**: *said tool*),

can describe motion or position signatures and sequence of considerable utility, e.g.,

grip, pinch (claims **15, 17**: *grabbing tool*), grasp (claim **61, 63**: *gripping tool*), stretch,

bend, twist, rotate, screw, point (claim **40, 42**: *pointing tool*), hammer, throw [0331].

These actions can cause objects depicted on a screen to be acted on, by sensing the

users hand relative to the human or the computer camera system or the screen (claim

20, 45, 66: *said controlling position comprises integrating said virtual component

within environment*, claim **21, 46, 67**: *said controlling environment is a camera*)

[0333].

Fig. 1 of Harvill et al. is an overall perspective view of a data processing system (4)

wherein movements of a part of a physical body (10) of an operator (12) are converted

into a virtual operator (16) (claims **13, 38, 59**: *virtual form of said tool is an iconic

virtual component*) for manipulating a virtual object (20) represented within data

processing system (4) [col. 2, lines 65 – 68; col. 3 lines 1 – 4]. As seen, the virtual

operator (16) takes the form of the input device, i.e. the hand of the operator (10)

(claims **14, 39, 60**: *virtual form of said tool is a first iconic component coupled with

a second virtual component that coincides with said tool's physical form*; claims

15, 40, 61: *virtual form of said tool is a virtual component coinciding with said

tool's physical form*). As seen, the virtual form takes the shape of a 2D object (claim

5: *virtual component is a 2D GUI*, claim **7**: *virtual component is a cursor*). The

movements of a hand (22) of physical operator (12) are converted into a virtual operator

(16) through a glove (24). Thus, as the hand (22) moves, the virtual operator (16)

mimics the movements on the display (claims **17, 42, 63**: *altering the relationship

between said tool and its corresponding 3D virtual component; mapping said tool

to said corresponding virtual component*). It would have been obvious to one of

ordinary skill in the art to have the virtual form also take a 3D shape since the data

processing system (4) converts the movements of a physical body (10) of an operator

(12) and the movements are within a 3D space (claim 6: *virtual component is a 3D

GUI*). As shown in Fig. 2 of Harvill et al., a programmable interval timer (28) receives

data from a CPU (32) of data processing system (4) through a bus (36). Internal timer

928) provides a signal to a stimulus circuit (40) through a bus (44) whenever virtual

operator (16) encounters virtual object (20) (claims **17, 42, 63**: *controlling position of

said corresponding virtual component to one of said virtual objects*) [col. 3, lines

15 – 22]. Although Harvill et al. is silent about generating an iconic form when the

virtual component is close enough to react with the virtual objects, the virtual operator

(16) reacts with the virtual object (20), thus altering it's state when near the virtual object

(20) (claims **17**, **42**, **63**: *generating an iconic form when corresponding virtual*

component is close enough to react to virtual objects).

Therefore, it would have been obvious to one of ordinary skill in the art to include

the conversion method of Harvill et al. to display a virtual operator coinciding with the

physical form of the input device of Pryor so the user can visually see the relationship

between the input device and the virtual object on the screen, providing an easier

means of manipulations of the virtual object on the screen.

42.   Claims **22**, **24-27**, **47**, **49-52**, **68**, **70-73**, **98-101**, **118-120** are rejected under 35

U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617

A1) in view of Kumar et al (US Patent No. 6,222,465 B1).

Pryor teaches the limitations of claims **22**, **24-27**, **47**, **49-52**, **68**, **70-73**, **98-101**,

118-120 with the exception of disclosing a virtual menu. However, Kumar et al. teaches

a system and method for manipulating virtual objects in a virtual environment where the

user can select options for a menu.

Referring to Fig. 6 of Pryor, Fig. 6 illustrates parts of the user such as the hands,

can describe motion or position signatures and sequence of considerable utility, e.g.,

grip, pinch, grasp, stretch, bend, twist, rotate, screw, point, hammer, throw [0331].

These actions can cause objects depicted on a screen to be acted on, by sensing the

users hand relative to the human or the computer camera system or the screen [0333].

Furthermore, Pryor allows the user to "alias" any object with any other object (claim **98**:

virtual components) [Pryor: [0281]. It would have been obvious that the first action

mode as disclosed in claims **26, 51, 72, 120** is the function of the aliased object

corresponding to the function of the object that it is aliased of, e.g. if a finger is aliased

as a pencil, the finger's first action mode is to draw like a pencil (claims **26, 51, 72, 120**:

wherein said first action mode is a default action mode).

Similarly, Kumar et al. teaches a system and method for manipulating virtual

objects in a virtual environment, for drawing curves and ribbons in the virtual

environment, and for selecting and executing commands for creating, deleting, moving,

changing, and resizing virtual objects (claim **100**: *change said plurality of virtual*

components) in the virtual environment using intuitive hand gestures and motions [col.

1, lines 65-68; col. 2, lines 1-4]. Referring to Fig. 6 of Kumar et al., when the active

gesture (42) is presented (claims **22, 47, 68**: *plurality of controls to activate one or*

more functions; claims **99, 101**: *virtual menu activated*), a main control menu is

displayed on the display unit (12) in the virtual environment (60). An exemplary main

control menu (100) and a variety of exemplary sub-menus (200)-(400) for invoking

different modes of operation of the system (8) are shown (claims **24, 49, 70, 118**:

virtual menu consisting of one or more choice for said user to choose from) [col.

5, lines 17-23]. Furthermore, the exemplary sub-menus (200)-(400) would allow the

user to alter the functions of the virtual components (claims **25, 50, 71, 119**: *toggle*

between a first action and a second action). The main menu (100) includes menu

commands that corresponds to a particular mode of the system (8) (claim **98**: *using a*

virtual menu to map) [col. 5, lines 29 – 31].

Therefore, it would have been obvious to one of ordinary skill in the art to include the virtual menu of Kumar et al. with the manipulation of virtual objects method and system of Pryor because the method and system of Pryor allows the user to "alias" any object with any other object [Pryor: [0281]]. Thus, virtual menus would be ideal so the user can choose from options to alias the object.

43.   In regards to claims **27, 52, 73**

The invention of Pryor uses weapons, such as swords and pistols as shown in Fig. 15. With the combined invention of Pryor in view of Kumar et al., it would have been obvious that the virtual menu of Kumar et al. provide the option to choose from a plurality of virtual weapons since games involving weapons makes use of the invention of Pryor. Furthermore, objects can be aliased [Pryor [0281]], thus optional and additional weapons besides the virtual component of the physical input device can be used within the game of Pryor allowing for customization within the game [Pryor [0441]-[0455]].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kobayashi et al. (US Patent No. 6,628,264 B1)
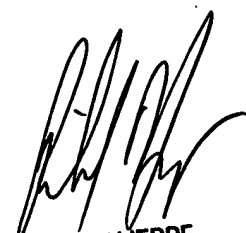
Harvill et al. (US Patent No. 5,986,643)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday - Friday, 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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